

## WETLAND MITIGATION SITE MONITORING REPORT FAP 310 (US 67) Mercer County

### Introduction

This report details monitoring of the wetland mitigation site created to compensate for FAP 310 (US 67) in Mercer County. The site consists of approximately 0.69 ha (1.7 ac) of wetland creation (Site 1) and 0.28 ha (0.7 ac) of wetland restoration (Site 2). The wetland creation is located in the southeast quarter of the intersection of U S Route 67 and the Edwards River; the restoration is located in the northeast quarter. The legal location is NE 1/4, SW 1/4, Section 35, T. 15 N., R. 2 W. The Illinois Department of Transportation (IDOT) completed construction of the site on 12 August 1997. Trees were planted during the fall of 1998 (T. Brooks, IDOT Wetlands Unit, memo to Allen Plocher, 10 February 1999). On-site monitoring was conducted on 9 September 1999.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and a discussion and recommendations based on the results. Methods and results are discussed by performance criteria for each goal.

### Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the monitoring plan (T. Brooks, IDOT Wetlands Unit, 1999) and the wetland compensation plan (C. Perino, IDOT Wetlands Unit, 1996) developed for this site. Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

**Project goal 1:** The created wetland community should be a jurisdictional wetland as defined by current federal standards.

**Objective:** The created wetland should compensate for the loss of 0.31 ha (0.76 ac) of floodplain forest and 0.09 ha (0.23 ac) of emergent wetland at a 1.5:1 ratio.

**Performance criteria:**

- a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic.
- b. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.
- c. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.

**Project goal 2:** The created wetland plant community should meet standards for floristic composition and vegetation cover.

**Objectives:** A floodplain forest will be created by planting native woody species. Herbaceous vegetation will be allowed to colonize the site naturally.

**Performance criteria:**

- a. Establishment of tree seedlings: Planted or volunteer tree seedlings should be established at each site.
- b. Floristic Quality Assessment: The floristic quality index (FQI) and mean coefficient of conservatism ( $\bar{c}$ ) for both sites should meet or exceed the FQI and  $\bar{c}$  values of the filled wetlands, 7.0 and 2.0, respectively.
- c. Dominance of vegetation: None of the three most dominant plant species in either site may be non-native species, cattails (*Typha* sp.), or reed canary grass (*Phalaris arundinacea*).

**Project goal 3:** The created wetland should function to remove sediments from the floodwaters of the Edwards River.

**Objectives:** The wetland creation site should retain floodwater and allow sediments to settle out of suspension.

**Performance criteria:**

- a. Sediment removal: Sediments in the wetland should accumulate at a rate of 0.3 to 1.1 in/yr.

## Methods

### Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter, i.e., FAC, FAC+, FACW, and OBL, is considered a hydrophyte. A predominance of vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

b. Presence of wetland hydrology

Illinois State Geological Survey (ISGS) personnel installed seven ground water monitoring wells and one stage gauge at the site in 1999. Locations for these sites can be found in the ISGS report *Edwards River/Mercer County Wetland Compensation Site* (Miner 1999). Water-level data was collected monthly throughout the year and biweekly during April and May. Methods are further described in the ISGS document *Annual Water-level Report for Active IDOT Sites* (Fucciolo et al. 1999).

c. Occurrence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described at various points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were noted.

Hydric soils typically develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soils indicators at the end of the five year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

## Project goal 2

### a. Establishment of tree seedlings

In order to create and restore floodplain forest, tree seedlings were planted at both compensation sites. According to the tasking order for this project (T. Brooks, IDOT Wetlands Unit, memo to Allen Plocher, 10 February 1999), the following number of trees were planted at the sites in Fall 1998:

Table 1. Species planted in the created wetland (Site 1).

Species	Common Name	Number
<i>Acer rubrum</i>	red maple	60
<i>Betula nigra</i>	river birch	60
<i>Quercus bicolor</i>	swamp white oak	60
<i>Quercus palustris</i>	pin oak	60

Table 2. Species planted in the restored wetland (Site 2).

Species	Common Name	Number
<i>Acer rubrum</i>	red maple	25
<i>Betula nigra</i>	river birch	25
<i>Quercus bicolor</i>	swamp white oak	25
<i>Quercus palustris</i>	pin oak	25

Survivorship and density of planted trees was determined through quantitative quadrat sampling for the created wetland and by censusing for the restored wetland. In the created wetland, a baseline was established along the north edge. The baseline was divided into five segments of equal length and within each a random numbers table was used to select a starting point for a transect. Each transect extended perpendicular to the baseline across the width of the site. Along each transect, trees were sampled in 10 m x 10 m quadrats (32 ft x 32 ft) at regular predetermined intervals (20 ft and 100 ft). A total of 10 quadrats were sampled. Live planted trees within each quadrat were counted. The number of volunteer seedlings per plot was designated as occasional (less than or equal to 10) or abundant (greater than 10). Approximately 14.5% of the total area of the created wetland was sampled within the quadrats. All live trees at the restored site were counted.

Density of live planted trees is given as the number of live planted trees/100 m<sup>2</sup> for each site. Survival was calculated as a percentage of the number of expected live individuals : (Total number of live planted trees/the number of known planted trees) x 100. For the wetland creation site, the total number of live planted trees was estimated from the sample data.

### b. Floristic Quality Assessment

The Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at the site to evaluate floristic quality and nativity. The assessment methodology is used to identify natural areas and facilitate floristic comparisons among sites. This technique is part of the procedure for the long-term monitoring of natural areas and the monitoring of restored or created wetlands (Swink and Wilhelm 1994). The premise of the method is that each native or adventive (but not introduced) plant species is assigned a conservatism coefficient (C) ranging from 0 to 10. Individual conservatism coefficients are ranks of species behavior and reflect the committee's (Taft et al. 1997) confidence level for a taxon's correspondence to anthropogenic disturbances. Coefficient values range from 0 to 10, with all adventive species given a coefficient of 0. Plant species assigned 0 have low affinities for natural areas, whereas those assigned 10 have very high affinities. When a complete species list is assembled for a wetland

site, the overall average conservatism coefficient ( $\bar{c}$ ) and a site floristic quality index (FQI) can be calculated. These values provide a measure of site floristic quality. Floristic quality index values (FQI values) less than 5 indicate that the area is extremely weedy or in an early successional stage (Swink and Wilhelm 1994). FQI values greater between 20 and 35 ( $\bar{c} \geq 3.0$ ) indicate that the area has evidence of native character and can be considered an botanical asset. FQI values between 35 and 50 ( $\bar{c} \geq 3.5$ ) indicate that the area has significant native character.

c. Dominance of vegetation

Plant species dominance was determined as in project goal 1, a. Predominance of hydrophytic vegetation. The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*

In addition, two permanent photography stations were established so that photographs could be used to document changes in plant community size and composition. The locations of the photo stations are indicated on the enclosed aerial photograph. Arrows indicate the direction in which the photos were taken.

**Project goal 3**

a. Sediment removal

ISGS personnel installed sediment traps in the wetland creation site in Fall 1999. No data has been collected from these traps at this time. Detailed methods will be included in the next annual report.

**Results**

**Project goal 1**

a. Predominance of hydrophytic vegetation

Dominant plant species for the mitigation sites in 1999 are shown in Table 3 and Table 4. All of the dominant species are rated OBL, FACW+, FAC+, or FAC and are, therefore, hydrophytic.

Table 3. Dominant plant species by stratum and wetland indicator status for the created wetland.

Dominant Plant Species	Stratum	Indicator Status
1. Bidens cernua	herb	OBL
2. Echinochloa muricata	herb	OBL
3. Polygonum lapathifolium	herb	FACW+
4. Polygonum pensylvanicum	herb	FACW+
5. Setaria glauca	herb	FAC

Table 4. Dominant plant species by stratum and wetland indicator status for the restored wetland.

Dominant Plant Species	Stratum	Indicator Status
1. Ambrosia trifida	herb	FAC+
2. Echinochloa muricata	herb	OBL
3. Panicum dichotomiflorum	herb	FACW+
4. Polygonum pensylvanicum	herb	FACW+
5. Setaria glauca	herb	FAC

b. Presence of wetland hydrology

Ground water-level data for the created wetland for April through August 1999 is presented in Appendix A (Miner 1999). Ground water-level elevations are shown in Figure 1 and depth to water (referenced from land surface) is shown in Figure 2. Based on these data, none of the created wetland area satisfied wetland hydrology criteria in 1999 (Miner 1999). The interpretation of these results, however, is limited because surface-water levels on the Edwards River were not measured to date (Miner 1999). Surface-water levels will be measured beginning in Fall 1999. With this information, we will have a more complete picture of wetland hydrology at the site.

In addition, an outlet exists at the northwest corner of the site which allows water to flow from the site into the Edwards River. A memo from Tom Brooks to Allen Plocher accompanying the as-built plans, dated 3 May 1999, states that this outlet "should have recently been filled so that the created wetland is a shallow enclosed one." However, at the time of this survey (9 September 1999), the outlet had not yet been filled. Blocking this outlet may be essential to establishing wetland hydrology at this site.

No monitoring wells were placed in the restored area and no indicators of wetland hydrology were observed. These indicators may not have been observed because this site has been disturbed within the last year by construction activities and tree plantings. The position of this site between the Edwards River and a levee, suggests that the area floods for some period of time each year. At this time, however, it is uncertain as to whether this site is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criteria.

c. Occurrence of hydric soils

Soils examined at both of the mitigation sites were found to be highly disturbed. Much cutting and filling has been done within the top twenty inches and the sites lack a true undisturbed A horizon.

At the wetland creation site, gravel was found in the upper twenty inches confirming that a road bed once occurred on the site. Even though the soils are disturbed, hydric soil indicators are present. Following is a soil description of a typical pedon at the site.

Table 5. Description of the soils at the created wetland (Site 1).

<u>Depth</u>	<u>Matrix Color</u>	<u>Concrete</u>	<u>Iron</u>	<u>Pore</u>	<u>Iron</u>	<u>Clay</u>	<u>Texture</u>	<u>Structure</u>
		<u>tions</u>	<u>Masses</u>	<u>linings</u>	<u>Deplet.</u>	<u>Deplet.</u>		
0-2 in	10YR 3/1	none	none	none	none	none	Sic1	Gr
2-11 in	10YR 3/1 10YR 3/2	none	mmp 10YR 5/8	none	none	none	Sic1	Sub B1
11-18 in	10YR 3/1	none	Cfd 10YR 4/4 ffp 7.5YR 4/6	none	none	none	Sic1	Sub B1
18-27 in	10YR 3/1 10YR 4/1	none	mmd 10YR 5/4	none	none	none	Sic1	Pr
27-35 in	2.5Y 5/1	none	mmd 10YR 5/6	none	none	none	Sic1	Pr

In addition to being disturbed, soils at the restoration site are also compacted and contain much rock and gravel. Soils could not be penetrated more than a couple of inches and so a

thorough description was not done and no determination was made concerning the hydric nature of these soils.

## Project goal 2

### a. Establishment of tree seedlings

Tables 6 and 7 show the results of the sampling of trees at Site 1 and the censusing of trees at Site 2, respectively. Both volunteer and planted tree seedlings are becoming established at the sites. At the created wetland, a total of 33 trees were counted within the sampled quadrats for a mean density of 3.3 live planted trees/100 m<sup>2</sup>. The total number of live planted trees at the site was estimated to be 228 with an estimated survival rate of 95%. The number of live planted trees per plot ranged from 0 to 5. All but two of the sampled plots had at least one live planted tree. Volunteer tree seedlings were observed in 50% of the sampled plots. No *Acer rubrum* trees were found within the plots or observed at Site 1. It is possible that these trees were never planted at the site.

A total of 57 live planted trees were present at Site 2 for a survival rate of 57% and density of 2.0 live planted trees/100 m<sup>2</sup>. Volunteer seedlings of *Acer sacharinum* and *Populus deltoides* were occasional throughout the site.

Table 6. Tree seedling establishment in the created wetland.

Transect	Quadrat	Live planted trees				Volunteers	
		Bet nig	Que bic	Que pal	Totals	Ace sac	Pop del
1	1	0	0	0	0	None	None
1	2	3	0	2	5	None	None
2	1	0	2	2	4	Abundant	Abundant
2	2	2	2	1	5	None	Occasional
3	1	1	2	1	4	Occasional	Occasional
3	2	2	2	1	5	None	None
4	1	1	1	1	3	None	None
4	2	3	0	2	5	None	None
5	1	0	0	0	0	None	Occasional
5	2	1	0	1	2	Occasional	None
		13	9	11	33		

Density: 3.3 trees/100m<sup>2</sup>

Variance: 4.01 Std. dev.: 2.00

Estimated total: 227.6 trees for entire 0.69 hectares (94.8% estimated survival)

Volunteer tree seedlings were present in 50% of the sampled plots.

Table 7. Tree seedling establishment in the restored wetland.

Live planted trees				Total
Ace rub	Bet nig	Que bic	Que pal	
2	20	20	15	57

Density: 2.04 trees/100m<sup>2</sup>

Total: 57 trees for this 0.28 hectare area (57% survival)

Occasional volunteer tree seedlings were present throughout the area.

b. Floristic Quality Assessment

Two FQI values were calculated for each site from the species lists included in Appendix B. The first FQI value is calculated from only species which became established on the site naturally; the second FQI value includes the planted trees. The created wetland has an FQI value of 9.3 and ac of 1.6 when only natural vegetation is included. When the planted trees are added, the FQI value is raised to 11.3 with a  $\bar{c}$  value of 1.9. The FQI value for the restored wetland is 7.9 with a  $\bar{c}$  value of 1.5 when only naturally established vegetation is considered, and 11.0 and 1.9 when the planted trees are included. In all cases, the FQI value exceeds the requirement of 7.0, however, in all cases, the  $\bar{c}$  value is lower than the required 2.0.

d. Dominance of vegetation

Both mitigation sites meet the performance criteria for dominance of vegetation. None of the three most dominant species at either site are non-native species, cattails, or reed canary grass. All of the dominant species (Table 3 and Table 4) for both sites are native except *Setaria glauca*. This species, although common, is not one of the three most dominant species at either site. *Ambrosia trifida* and *Panicum dichotimoflorum* are among the three most dominant species at the restoration site. These are weedy undesirable species, however, like *Setaria glauca*, they are early successional shade-intolerant species and should disappear from the site as the trees grow and canopy cover increases. Cattails and reed canary grass occur at the created wetland site, but only in small numbers.

Photographs were taken from the permanent photography stations and are in Appendix C of this report.

**Project goal 3**

a. Sediment removal

No data has been collected from the sediment traps at this time. Results will be included in the next annual report.

## Discussion

After one monitoring season, these sites show progress towards floodplain forest establishment. With slight modifications to improve wetland hydrology, the sites will most likely comply with project goals, objectives, and performance standards by the end of the monitoring period.

The vegetation at both sites is hydrophytic and meets the dominance criteria for native non-invasive species. Both volunteer and planted tree seedlings are becoming established on the sites. The FQI values are above the required level, however the  $\bar{c}$  values are low. This means that there are a large number of species at each site that have very low coefficients of conservatism (C). This is common on disturbed and early successional sites and is not a cause for concern at this time. It is likely that as succession progresses, more conservative species will become established on the site.

The primary concern at this time for these sites is establishing (or finding evidence of) wetland hydrology. For the created wetland, filling in the outlet in the northwest corner may be a simple solution to this problem. Also, by monitoring the surface-water levels of the Edwards River, it may be shown that wetland hydrology already exists on the site. For the restored wetland, observing the site again in a year when it has more time to recover from recent disturbances, may reveal that it does indeed have wetland hydrology.

Soils at both sites have been seriously disturbed. Even so, the soils at the created wetland site do contain some hydric soil indicators, and therefore can be characterized as hydric. Soils at the wetland restoration site are very compacted and contain much gravel and rock. This may be a detriment to the establishment and survival of vegetation at the site. Herbaceous vegetation at the site was much more sparse than at the created wetland. It may also impede the development of hydric soils at the site. Water will not be able to readily penetrate the site and will run off more quickly.

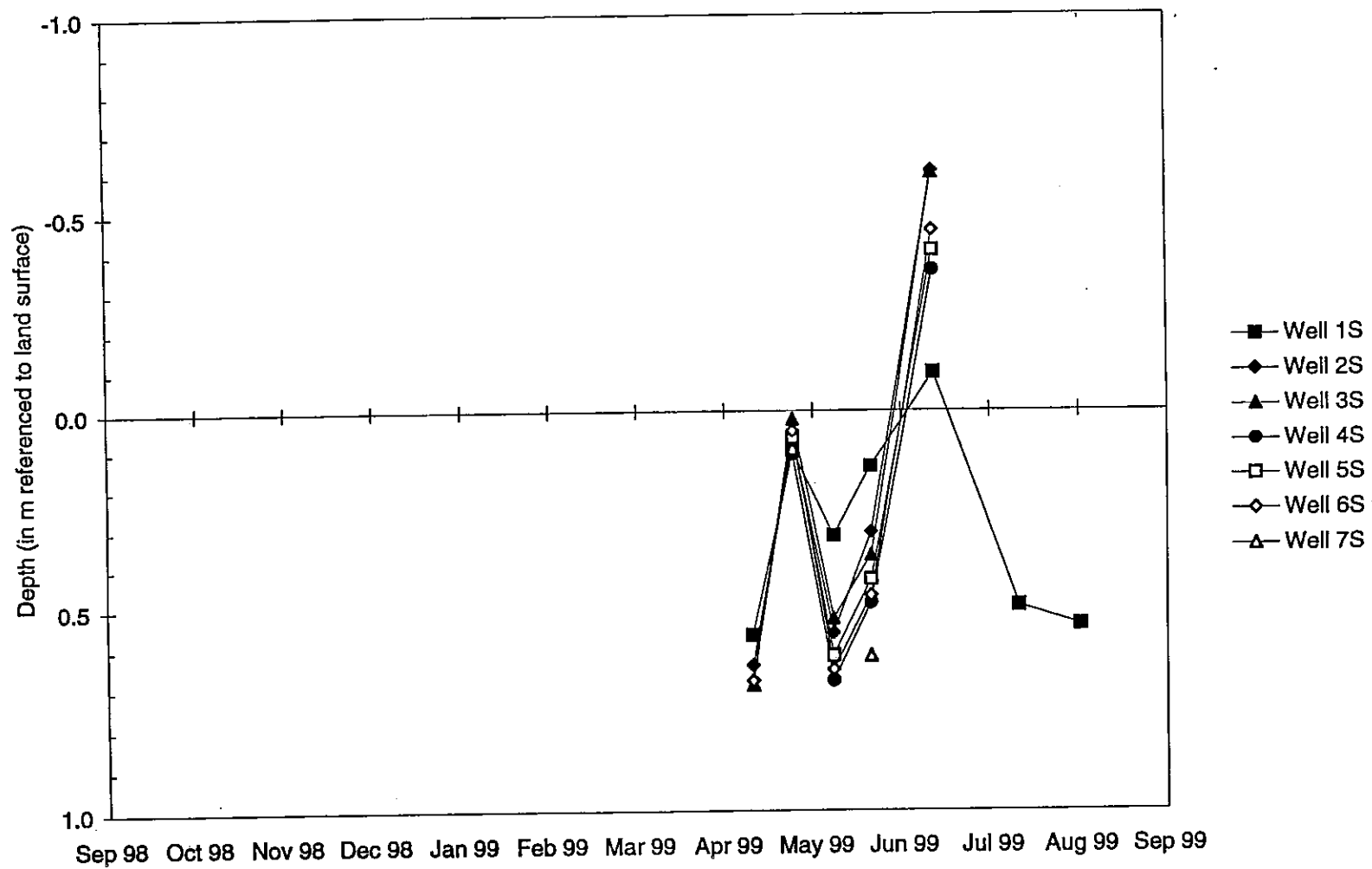
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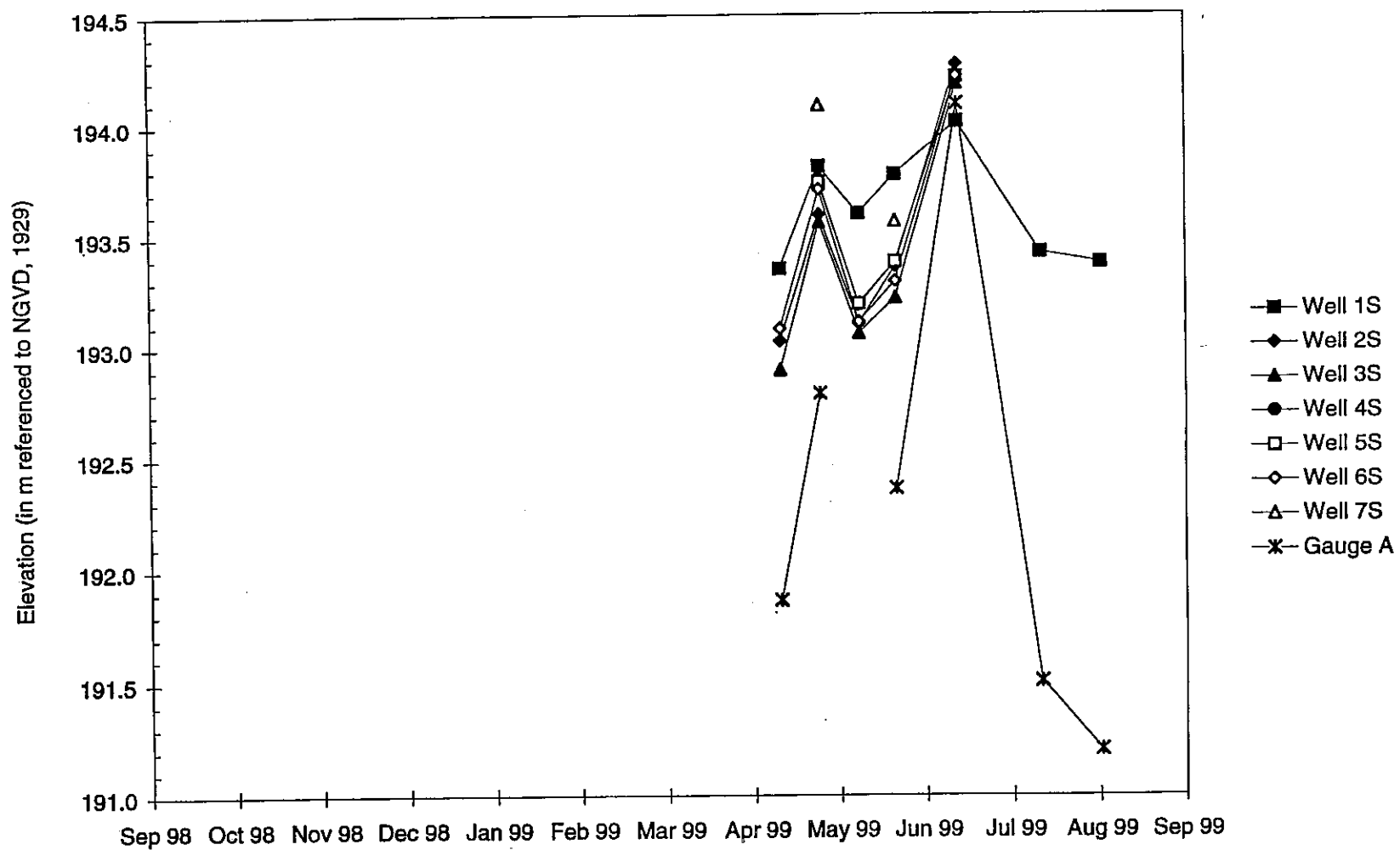
**Appendix A**  
**Hydrologic Information**

**Edwards River, Mercer County**  
**September 1, 1998 to September 1, 1999**

**Figure 2. Depth to Water**



### Figure 1. Water-Level Elevations



**Appendix B**  
**Wetland Determination Forms**

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 1 (page 1 of 5)

**Field Investigators:** Feist, Keene, Larimore, Wilm**Date:** 9 September 1999 **Project Name:** FAP 310 (US 67)**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2**State:** Illinois **County:** Mercer **Applicant:** IDOT District 4**Site Name:** Wetland creation**Legal Description:** NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W**Location:** This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

Do normal environmental conditions exist at this site? Yes: X No:  
 Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

**VEGETATION**

Dominant Plant Species	Indicator Status	Stratum
1. <i>Bidens cernua</i>	OBL	herb
2. <i>Echinochloa muricata</i>	OBL	herb
3. <i>Polygonum lapathifolium</i>	FACW+	herb
4. <i>Polygonum pensylvanicum</i>	FACW+	herb
5. <i>Setaria glauca</i>	FAC	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

**Hydrophytic vegetation:** Yes: X No:**Rationale:** More than 50% of the dominants are OBL, FACW, FAC+, or FAC.**SOILS**

Series and phase: Undetermined

On Mercer County hydric soils list? Yes: No: X

Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X

Redox concentrations: Yes: X No: Redox depletions: Yes: No: X

Matrix color: 2.5Y 5/1

Other indicators: This soil is found in a level to depressional area.

**Hydric soils:** Yes: X No:**Rationale:** This soil surface has been altered somewhat because of cut and fill activities associated with an old road bed. This soil meets the requirements of the Natural Resource Conservation Service hydric soil indicators F5 and F6, thick dark surface and redox dark surface, respectively.

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 1 (page 2 of 5)

**Field Investigators:** Feist, Keene, Larimore, Wilm**Date:** 9 September 1999      **Project Name:** FAP 310 (US 67)**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2**State:** Illinois      **County:** Mercer      **Applicant:** IDOT District 4**Site Name:** Wetland creation**Legal Description:** NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W**Location:** This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.**HYDROLOGY****Inundated:** Yes:      No: X      **Depth of standing water:** NA**Depth to saturated soil:** > 1.2 m (48 in)

Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from the Edwards River and by precipitation. Water leaves the site via evapotranspiration and sheet flow into the near by Edwards River.

**Size of Watershed:** 699 km<sup>2</sup> (270 mi<sup>2</sup>)

Other field evidence observed: Seven wells were placed at this site to monitor the water levels during the 1999 growing season. Water levels measured in none of these wells conclusively satisfied the wetland hydrology criteria.

**Wetland hydrology:** Yes:      No: X

**Rationale:** Water level data collected from the seven wells at the site indicate that this site is not inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

**DETERMINATION AND RATIONALE:****Is the site a wetland?** Yes:      No: X

**Rationale:** Although dominant hydrophytic vegetation is present at the site, hydric soils and wetland hydrology are lacking; thus, we determined that this site is not a wetland. The NWI did not code this site as a wetland.

# ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 3 of 5)

**Field Investigators:** Feist, Keene, Larimore, Wilm

**Date:** 9 September 1999 **Project Name:** FAP 310 (US 67)

**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2

**State:** Illinois **County:** Mercer **Applicant:** IDOT District 4

**Site Name:** Wetland creation

**Legal Description:** NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

**Location:** This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

## SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator	C† status
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer saccharinum</i>	silver maple	herb	FACW	1
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	bitterweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens cernua</i>	nodding beggar-ticks	herb	OBL	2
<i>Bidens connata</i>	purplestem beggar-ticks	herb	OBL	2
<i>Bidens frondosa</i>	common beggar-ticks	herb	FACW	1
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eupatorium altissimum</i>	tall boneset	herb	FACU	1
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Fragaria virginiana</i>	wild strawberry	herb	FAC-	2
<i>Helenium autumnale</i>	autumn sneezeweed	herb	FACW+	3
<i>Hibiscus trionum</i>	flower-of-an-hour	herb	UPL	*
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Polygonum aviculare</i>	knotweed	herb	FAC-	*
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Polygonum scandens</i>	climbing buckwheat	herb	FAC	2
<i>Populus deltoides</i>	Eastern cottonwood	shrub, herb	FAC+	2

Species list continued on next page.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 4 of 5)

**Field Investigators:** Feist, Keene, Larimore, Wilm**Date:** 9 September 1999**Project Name:** FAP 310 (US 67)**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2**State:** Illinois**County:** Mercer**Applicant:** IDOT District 4**Site Name:** Wetland creation**Legal Description:** NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W**Location:** This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.SPECIES LIST *continued*

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix amygdaloides</i>	peach-leaved willow	tree	FACW	4
<i>Salix exigua</i>	sandbar willow	herb	OBL	1
<i>Salix nigra</i>	black willow	herb	OBL	3
<i>Scirpus atrovirens</i>	dark green rush	herb	OBL	4
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)

 $mCv = \sum C/N = 54/34 = 1.6$ 

\* Non-native species

 $FQI = mCv(\sqrt{N}) = 2.2(\sqrt{31}) = 9.3$ 

## PLANTED TREES

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Quercus bicolor</i>	swamp white oak	tree	FACW+	7
<i>Betula nigra</i>	red birch	tree	FACW	4

† Coefficient of Conservatism (Taft et al. 1997)

 $mCv = \sum C/N = 69/37 = 1.9^{**}$ 

\* Non-native species

 $FQI = mCv(\sqrt{N}) = 1.9(\sqrt{37}) = 11.3^{**}$ **\*\***These calculations include the complete species list above, as well as the planted trees.

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 1 (page 5 of 5)

**Field Investigators:** Feist, Keene, Larimore, Wilm

**Date:** 9 September 1999      **Project Name:** FAP 310 (US 67)

**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2

**State:** Illinois      **County:** Mercer      **Applicant:** IDOT District 4

**Site Name:** Wetland creation

**Legal Description:** NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

**Location:** This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

Determined by: Mary Ann Feist, Rick Larimore, and Brian Wilm  
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615 East Peabody Drive  
Champaign, Illinois 61820

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 2 (page 1 of 4)

**Field Investigators:** Feist, Keene, Larimore, Wilm**Date:** 9 September 1999**Project Name:** FAP 310 (US 67)**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2**State:** Illinois**County:** Mercer**Applicant:** IDOT District 4**Site Name:** Wetland restoration**Legal Description:** SE 1/4, NW 1/4, Sec. 35, T. 15 N., R. 2 W**Location:** This wetland restoration site is located just north of the Edwards River and just east of US 67.

Do normal environmental conditions exist at this site?

Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed?

Yes: No: X

**VEGETATION**

<b>Dominant Plant Species</b>	<b>Indicator Status</b>	<b>Stratum</b>
1. <i>Ambrosia trifida</i>	FAC+	herb
2. <i>Echinochloa muricata</i>	OBL	herb
3. <i>Panicum dichotomiflorum</i>	FACW+	herb
4. <i>Polygonum pensylvanicum</i>	FACW+	herb
5. <i>Setaria glauca</i>	FAC	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

**Hydrophytic vegetation:** Yes: X No:**Rationale:** Less than 50% of the dominants are OBL, FACW, FAC+, or FAC.**SOILS**

Series and phase: Undetermined

On Mercer County hydric soils list?

Yes: No: X

Is the soil a histosol? Yes: No: X

Histic epipedon present? Yes: No: X

Redox concentrations: Yes: No: Undet: X

Redox depletions: Yes: No: Undet: X

Matrix color: NA

Other indicators: None

**Hydric soils:** Yes: No: Undet: X**Rationale:** This soil has been altered because of cut and fill activities used in building the road and bridge. The site was severely compacted and contained rock and gravel. Penetration of the soil surface was nearly impossible. Soil colors of this material would not reflect the true soil genesis at this site.

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 2 (page 2 of 4)

**Field Investigators:** Feist, Keene, Larimore, Wilm**Date:** 9 September 1999      **Project Name:** FAP 310 (US 67)**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2**State:** Illinois      **County:** Mercer      **Applicant:** IDOT District 4**Site Name:** Wetland restoration**Legal Description:** SE 1/4, NW 1/4, Sec. 35, T. 15 N., R. 2 W**Location:** This wetland restoration site is located just north of the Edwards River and just east of US 67.**HYDROLOGY****Inundated:**      Yes:      No: X**Depth of standing water:** NA**Depth to saturated soil:** NA**Overview of hydrological flow through the system:** This site is hydrologically influenced by precipitation and overflow from the Edwards River. Water leaves the site via evapotranspiration and sheet flow into the adjacent Edwards River.**Size of Watershed:** 699 km<sup>2</sup> (270 mi<sup>2</sup>)**Other field evidence observed:** None**Wetland hydrology:** Yes:      No:      Undetermined: X**Rationale:** No indicators of wetland hydrology were observed, however, this site was disturbed within the last year by construction activities and tree plantings. The position of this site between the Edwards River and a levee, suggests that the area floods for some period of time each year. At this time, it is uncertain as to whether this site is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.**DETERMINATION AND RATIONALE:****Is the site a wetland?** Yes:      No: X**Rationale:** Although dominant hydrophytic vegetation is present at the site, hydric soils and wetland hydrology are lacking or undetermined at this time; thus, we determined that this site is currently not a wetland. The NWI coded this site as a temporarily flooded, broad-leaved deciduous, forested, palustrine wetland (PFO1A).

# ROUTINE ONSITE WETLAND DETERMINATION

Site 2 (page 3 of 4)

**Field Investigators:** Feist, Keene, Larimore, Wilm

**Date:** 9 September 1999 **Project Name:** FAP 310 (US 67)

**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2

**State:** Illinois **County:** Mercer **Applicant:** IDOT District 4

**Site Name:** Wetland restoration

**Legal Description:** SE 1/4, NW 1/4, Sec. 35, T. 15 N., R. 2 W

**Location:** This wetland restoration site is located just north of the Edwards River and just east of US 67.

## SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Abutilon theophrasti</i>	buttonweed	herb	FACU-	*
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer saccharinum</i>	silver maple	herb	FACW	1
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	bitterweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens cernua</i>	nodding beggar-ticks	herb	OBL	2
<i>Bidens connata</i>	purplestem beggar-ticks	herb	OBL	2
<i>Bidens frondosa</i>	common beggar-ticks	herb	FACW	1
<i>Calystegia sepium</i>	American bindweed	herb	FAC	1
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Helianthus strumosus</i>	pale-leaved sunflower	herb	UPL	4
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Leersia virginica</i>	white grass	herb	FACW	4
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Melilotus officinalis</i>	yellow sweet clover	herb	FACU	*
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum capillare</i>	witch grass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum scandens</i>	climbing buckwheat	herb	FAC	2
<i>Populus deltoides</i>	eastern cottonwood	herb	FAC+	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*

Species list continued on the next page.

# ROUTINE ONSITE WETLAND DETERMINATION

Site 2 (page 4 of 4)

**Field Investigators:** Feist, Keene, Larimore, Wilm

**Date:** 9 September 1999 **Project Name:** FAP 310 (US 67)

**Section No.:** 104RS-2, (104)BR, (104-1)BR, 105RS-2

**State:** Illinois **County:** Mercer **Applicant:** IDOT District 4

**Site Name:** Wetland restoration

**Legal Description:** SE 1/4, NW 1/4, Sec. 35, T. 15 N., R. 2 W

**Location:** This wetland restoration site is located just north of the Edwards River and just east of US 67.

## SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Sambucus canadensis</i>	common elder	shrub	FACW-	2
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Trifolium repens</i>	white clover	herb	FACU+	*
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)

\* Non-native species

$$mCv = \sum C/N = 42/28 = 1.5$$

$$FQI = mCv(\sqrt{N}) = 1.5(\sqrt{28}) = 7.9$$

## PLANTED TREES

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Quercus palustris</i>	pin oak	shrub	FACW	4
<i>Quercus bicolor</i>	swamp white oak	shrub	FACW+	7
<i>Betula nigra</i>	red birch	shrub	FACW	4
<i>Acer rubrum</i>	red maple	shrub	FAC	5

† Coefficient of Conservatism (Taft et al. 1997)

\* Non-native species

$$mCv = \sum C/N = 62/32 = 1.9^{**}$$

$$FQI = mCv(\sqrt{N}) = 1.9(\sqrt{32}) = 11.0^{**}$$

**\*\***These calculations include the complete species list above, as well as the planted trees.

Determined by: Mary Ann Feist, Rick Larimore, and Brian Wilm  
(vegetation and hydrology)  
Dennis Keene  
(soils and hydrology)  
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**Appendix C**  
**Photographs of Wetland Mitigation Sites**



Photoplot 1. View of the wetland creation looking northeast.



Photoplot 2. View of the wetland creation site looking north.



Photoplot 3. View of the wetland restoration site looking south.



**Legend**

FAP 310 (US 67)

Section 104RS-2

Mercer County

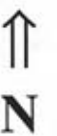
Mitigation Site Monitoring

**Wetland Mitigation Sites 1 & 2**

Scale 1:4800

1 in = 400 ft

400 ft



Photography station:



Baseline starting point:





**Legend**  
FAP 310 (US 67)  
Section 104RS-2  
Mercer County  
Mitigation Site Monitoring

**Wetland Mitigation Sites 1 & 2**

Scale 1:4800

1 in = 400 ft

400 ft



Photography station:

Baseline starting point:

